

In the Claims

1.-2. (Cancelled)

3. (Currently Amended) An Fe-Cr-Si based non-oriented electrical steel sheet comprising:

2.5% to 10% by mass of Si;

1.5% to 20% by mass of Cr;

0.1% to 2% by mass of Al;

0.006% by mass or less of C;

0.0021% by mass to 0.004% by mass or less of N;

0.005% by mass or less of S;

0.005% by mass or less of Ti;

0.005% by mass or less of Nb; and

the balance being Fe and incidental impurities,

wherein the electrical resistivity of the steel is $60 \mu\Omega\text{cm}$ or more, and the number of nitrides containing chromium per mm^2 in the interior of the steel sheet is 2,500 or less.

4. (Currently Amended) An Fe-Cr-Si based non-oriented electrical steel sheet comprising:

2.5% to 10% by mass of Si;

1.5% to 20% by mass of Cr;

0.1% to 2% by mass of Al;

0.006% by mass or less of C;

0.0021% by mass to 0.004% by mass or less of N;

0.005% by mass or less of S;

0.005% by mass or less of Ti;

0.005% by mass or less of Nb;

at least one of 0.005% to 1% by mass of Sb and 0.005% to 1% by mass of Sn; and

the balance being Fe and incidental impurities,

wherein the electrical resistivity of the steel is $60\ \mu\Omega\text{cm}$ or more, and the number of nitrides containing chromium per mm^2 in the interior of the steel sheet is 2,500 or less.

5. (Currently Amended) The Fe-Cr-Si based non-oriented electrical steel sheet according to ~~any one of Claims 1 to 3~~ or 4, further comprising at least one of 1% by mass or less of Mn and 1% by mass or less of P.

6. (Currently Amended) A method for producing an Fe-Cr-Si based non-oriented electrical steel sheet comprising the steps of:

casting molten steel containing 2.5% to 10% by mass of Si and 1.5% to 20% by mass of Cr;

subjecting the cast steel to rolling process including cold rolling (including warm rolling, hereinafter the same); and

subjecting the resulting rolled steel sheet to final annealing,

wherein the nitriding gas content in the final annealing atmosphere is controlled to 5 percent by volume or more and less than 30 percent by volume in total in terms of nitrogen gas.

7. (Currently Amended) A method for producing an Fe-Cr-Si based non-oriented electrical steel sheet comprising the steps of:

casting molten steel containing 2.5% to 10% by mass of Si, 1.5% to 20% by mass of Cr, and at least one of more than 0.04% to 1% by mass of Sb and more than 0.06% to 1% by mass of Sn;

subjecting the cast steel to rolling process including cold rolling; and

subjecting the resulting rolled steel sheet to final annealing,

wherein the nitriding gas content in the final annealing atmosphere is controlled to 60 percent by volume or more and less than 95 percent by volume in total in terms of nitrogen gas.

8. (Currently Amended) A method for producing an Fe-Cr-Si based non-oriented electrical steel sheet comprising the steps of:

casting molten steel containing 2.5% to 10% by mass of Si, 1.5% to 20% by mass of Cr, and 0.1% to 2% by mass of Al;

subjecting the cast steel to rolling process including cold rolling; and

subjecting the resulting rolled steel sheet to final annealing,

wherein the nitriding gas content in the final annealing atmosphere is controlled to 60 percent by volume or more and less than 95 percent by volume in total in terms of nitrogen gas.

9. (Currently Amended) A method for producing an Fe-Cr-Si based non-oriented electrical steel sheet comprising the steps of:

casting molten steel containing 2.5% to 10% by mass of Si, 1.5% to 20% by mass of Cr, 0.1% to 2% by mass of Al, and at least one of 0.005% to 1% by mass of Sb and 0.005% to 1% by mass of Sn;

subjecting the cast steel to rolling process including cold rolling; and

subjecting the resulting rolled steel sheet to final annealing,

wherein the nitriding gas content in the final annealing atmosphere is controlled to 60 percent by volume or more and less than 95 percent by volume in total in terms of nitrogen gas.

10. (Original) The method for producing the Fe-Cr-Si based non-oriented electrical steel sheet according to any one of Claims 6 to 9, wherein the rolling process comprises the substeps of:

hot-rolling the cast steel slab;

subjecting the resulting hot-rolled sheet to hot-rolled sheet annealing as necessary;

and

subjecting the hot-rolled sheet or annealed hot-rolled sheet to cold rolling once, or twice or more with intermediate annealing being interposed therebetween.